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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,830	02/19/2002	Kenji Tsukada	Q67368	6300

7590

08/06/2003

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EXAMINER

DUDDING, ALFRED E

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 08/06/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary

Application No.

10/049,830

Applicant(s)

TSUKADA ET AL.

Examiner

Alfred E. Dudding

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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c. Figure 15, reference characters "104a" and "104b" (leads) are not mentioned in the specification.

d. Figure 21, reference character "189" is not mentioned in the specification.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 3 – 16, and 18 - 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. (U.S. 6,435,638 B1) in view of Anderson et al. (U.S. 6,044,694 A).

Wilson et al. disclose a printing apparatus and a method of controlling an ink jet recording apparatus on which a liquid container is able to be detachably mounted, Figure 5, element 50 (ink jet printer), said liquid container having a container body containing a liquid supplied to a recording

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head discharging an ink droplet from a nozzle opening, Figure 5, elements 110, 112, 114, 116 (ink containers mounted on ink jet recording apparatus)), a liquid supplying opening for supplying said liquid outside of said container body, Figure 3, clearly seen. Wilson et al. teach controlling said ink jet recording apparatus so that said ink jet recording apparatus is set in an operable state or in a non-operable state based on a result of said judging step or in a case that said ink jet recording apparatus is in said non-operable state, selecting either to maintain said non-operable state of said ink jet recording apparatus or to change said non-operable state of said ink jet recording apparatus to said operable state, Column 5, lines 62 – 64.

Wilson et al. fail to teach the claimed invention of a piezoelectric device for detecting said liquid within said container body, comprising the steps of detecting a characteristic value of said piezoelectric device by a detection section provided inside or outside of said ink jet recording apparatus; judging whether or not said characteristic value satisfies a predetermined condition by a judging section provided inside or outside of said ink jet recording apparatus.

Anderson et al. disclose plural piezoelectric devices for detecting said liquid within said container body, Figure 2, elements 50, 52, and 54 (piezoelectric detectors), comprising the steps of detecting a characteristic value of said piezoelectric device by a detection section provided inside or outside of said ink jet recording apparatus (Figure 2 shows bender portion of piezoelectric detector inside the container), Column 2, lines 28 – 52 (characteristic of the piezoelectric detector), judging whether or not said characteristic value satisfies a predetermined condition by a judging section provided inside or outside of said ink jet recording apparatus, Abstract, lines 8 – 11. Wilson et al. teach a method of controlling an ink jet recording apparatus, wherein said characteristic value is an element characteristic value of a piezoelectric element of said piezoelectric device, Column 2, lines 34 – 42 cite measuring frequency, impedance and Q characteristics of the piezoelectric detection device can. Wilson et al. discloses wherein said detection section detects oscillation characteristic values of said at least

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two piezoelectric devices in said detecting step, and wherein said judging section judges a consumption state of said liquid within said liquid container based on a relative condition of mutual oscillation characteristic values of said at least two piezoelectric devices in said judging step, Column 4, lines 4 – 15. Wilson et al. teach that said additional piezoelectric device is positioned nearby a bottom surface of said container body, Figure 2, element 50, clearly seen. Wilson et al. teach that said additional piezoelectric device is positioned nearby said piezoelectric device, an initial liquid level when said liquid within said container body is not consumed being located between said piezoelectric device and said additional piezoelectric device, Figure 2, element 32 (liquid), elements 50 and 54 (piezoelectric detectors).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the piezoelectric detector of Wilson et al. in the recording apparatus (ink jet printer) of Anderson et al. in order to detect ink levels and shutting down printing operations to prevent possible damage to a printhead.

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. in view of Anderson et al. as applied to claim 16 above, and further in view of Cook (U.S. 6,155,664 A).

The combination of Wilson et al. and Anderson et al. teach all of the limitations of the claimed invention except for a method of controlling an ink jet recording apparatus wherein the detecting step is executed at the time that the liquid container is mounted on the ink jet recording apparatus.

Cook discloses a method for controlling an ink jet recording apparatus wherein the detecting step is executed at the time that the liquid container is mounted on the ink jet recording apparatus, Figure 3, steps 54 – 60.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the detect at start up of the ink level of Cook in the combined invention of Wilson et al. (ink jet printer with detachable ink containers) and Anderson et al. (piezoelectric ink level detectors) in

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order to obtain information on existing ink levels in the ink container in order to prevent possible damage to the printhead.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. in view of Anderson et al. as applied to claims 1 and 16 above, and further in view of Murray et al. (U.S. 5,610,635 A).

The combination of Wilson et al. and Anderson et al. teach all of the limitations of the claimed invention except an ink jet recording apparatus further comprising a storage device capable of storing at least a characteristic value of the piezoelectric detector.

Murray et al. discloses a storage device, Figure 5, element 48 that can store a characteristic value of the piezoelectric detector, Column 9, lines 66 –67, Column 10, lines 1 – 17.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the storage device of Murray et al. in the combined invention of Wilson et al. and Anderson et al. In order to reduce size of printer, and keep information pertinent to the ink container local to the printer.

Conclusion

10. The references cited by the search report were not entered on the PTO-1449 form (IDS) and are listed on the Notice of References Cited, form PTO- 892.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Cota (JP-56039414 A) discloses two piezoelectric detectors to determine fluid level in a container, Figure 6, elements 10 and 11. Cota fails to teach the claimed invention of detecting an oscillation characteristic of the piezoelectric detector.

b. Hasegawa et al. (JP-62095225 A) discloses a piezoelectric detector for detecting a fluid level in a container, Figure 1, element 4. Hasegawa et al. fail to teach the claimed invention of two

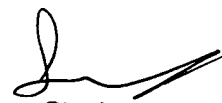
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piezoelectric detectors or controlling an ink jet apparatus so that the ink jet recording apparatus is set to an operable or a non-operable state based on a result of detecting the fluid (ink) level.

c. Wimmer et al. (U. S. 5,689,288 A) disclose a piezoelectric detector for detecting fluid level, Figures 1 and 2, elements 24 (piezoelectric detector, 14 (paddle). Wimmer et al. fail to teach the claimed invention of two piezoelectric detectors or controlling an ink jet apparatus so that the ink jet recording apparatus is set to an operable or a non-operable state based on a result of detecting the fluid (ink) level.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alfred Dudding whose telephone number is (703) 308-6082. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, AU 2853, can be reached at (703) 308-4896. The fax phone numbers for this Group are (703) 305-3432, (703) 305-3431, (703) 308-7382, (703) 308-7724, and (703) 308-7722. The examiner's fax phone number is (703) 746-4390.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 308-0956.


Stephen D. Meier
Primary Examiner

Alfred Dudding

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7-22-03